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SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE

FRIDAY, JANUARY 10, 1908

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REPORT OF THE GENERAL SECRETARY OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE FOR THE CHICAGO MEETING, CONVOCATION WEEK, 1907-8

THE fifty-eighth meeting of the American Association for the Advancement of Science was held from December 30, 1907, to January 3, 1908, inclusive, at the University of Chicago.

This was the second meeting in Chicago, and, including the one at New Orleans, the ninth which has been held so far west. The first Chicago meeting, the seventeenth of the association, was held in August, 1868. Several things about it seem of interest in this connection. The sessions were held in the Assembly Hall of the Y. M. C. A. Building and the Baptist Church, both located in what is now the downtown business section of the city. The meeting was under the auspices of the citizens rather than of any scientific or educational body.

During the war no meetings were held, but in 1866 an effort was made to revive the association, and a meeting was informally called at Buffalo. It was attended by 79 persons.

No better success as to numbers attended the regularly called meeting of the next year at Burlington, only 73 being present. The heaven was working, however, and the first Chicago meeting may be said to have begun a new period of prosperity.

This meeting was attended by 259 persons, the total membership being 428 at the time of assembling, showing a remarkably large ratio of attendance to membership. The enthusiasm which had been aroused was indicated by the fact that 261 persons took membership in the association at this meeting. The list of names is interesting. It includes many business men whose names have been and are prominent in connection with the enormous growth and development of Chicago's commercial interests.

It seems especially noteworthy that the list includes John Crerar, Orrington Lunt and G. C. Walker, whose names are associated, respectively, with the John Crerar Library in the city; the Orrington Lunt Library at Northwestern University, and the Walker Museum of the University of Chicago.

The majority of the 261 names belong to the city of Chicago, but the addresses are widely enough distributed to show that interest in science and in the association was awakened in all settled parts of the north. There were 151 papers presented on a wide range of topics. To one whose contact with the association is confined to later years, it seems odd to find a single sectional program containing papers on subjects belonging to astronomy, physics, chemistry, economics and engineering. Present at the meeting and presenting papers was G. W. Hough, then of Albany, N. Y., but for years professor of astronomy in the Northwestern University. So far as the writer could ascertain, he is the only one of those attending this first Chicago meeting who also attended the one just held, where he was present at the sessions of Section A.

The opening session of the meeting at the University of Chicago was held Monday, December 30, in Leon Mandel Hall, at 10 A.M. It was called to order by retiring President William H. Welch, who introduced President E. L. Nichols, who presided. Addresses of welcome were made on behalf of the university by Dean George E. Vincent, representing President Judson, and on behalf of the city by Mr. George E. Adams, vice-chairman of the local committee. President Nichols replied briefly on behalf of the association. An interesting feature of the addresses was the graceful reference of the speakers to the recent conferring of both the Copley medal and the Nobel prize on Professor A. A. Michelson, of the University of Chicago.

The address of retiring President Welch was delivered in the same hall on Monday evening and was intently followed by a large audience. After it the members of the association were received by Mrs. H. P. Judson and Dean Vincent.

The number of members officially registered for the meeting is 725. Members of affiliated societies not members of the association registered to the number of 185. It is certain that many members of the association failed to register, while comparatively few from the affiliated societies registered with the permanent secretary. No account was taken of visitors not members of any society. From data available at the close of the meeting, it is fair to assume that the number of persons attending was close to 2,000. The members of the association who registered are distributed as follows:

| | | | |
|---------------------|-----|----------------------|---|
| Illinois | 221 | North Dakota | 3 |
| Ohio | 57 | New Jersey | 3 |
| New York | 56 | North Carolina | 3 |
| Dist. of Columbia.. | 47 | Louisiana | 3 |
| Indiana | 38 | Texas | 2 |
| Wisconsin | 36 | Maine | 2 |
| Michigan | 34 | Mississippi | 2 |
| Minnesota | 32 | Kentucky | 1 |
| Missouri | 31 | Delaware | 1 |

| | | | |
|---------------------|----|---------------------|---|
| Iowa | 25 | Alabama | 1 |
| Pennsylvania | 20 | Virginia | 1 |
| Nebraska | 16 | Rhode Island | 1 |
| Massachusetts | 15 | Utah | 1 |
| Connecticut | 11 | California | 1 |
| Canada | 11 | Georgia | 1 |
| Kansas | 10 | South Carolina | 1 |
| Maryland | 8 | Oklahoma | 1 |
| Colorado | 6 | England | 1 |
| South Dakota | 5 | Hawaii | 1 |
| Tennessee | 5 | Japan | 1 |
| New Hampshire ... | 4 | | |

Taking the number present at 2,000 and applying the same geographical distribution would indicate that about 1,300 persons attended from within a radius of 500 miles against nearly 700 from a greater distance. As to distribution east and west, it appears that, leaving out Illinois and the two from outside the continent, the registered attendance from east of Chicago was 324, while from west of Chicago 178 persons registered.

During the meeting 309 new members were elected. One hundred and forty-two members were elected to fellowship. About one half of these are from membership in affiliated societies under the general rule adopted at the Philadelphia meeting.

The societies meeting in affiliation were the American Society of Naturalists, the American Mathematical Society (Chicago Branch), the American Physical Society, the American Chemical Society, the American Physiological Society, the American Society of Biological Chemists, the American Society of Zoologists (Central Branch), the Association of American Anatomists, the Association of American Geographers, the Society of American Bacteriologists, the Entomological Society of America, the Botanical Society of America, the American Psychological Association, the Western Philosophical Association, the American Anthropological Association, the American Folk Lore Society and the Bibliographical Society of America. In practically all cases one or more joint sessions of the

society were held with the corresponding section of the association. In some cases the joint meeting included more than one affiliated society, and in at least one case two of the sections.

At one of these joint sessions occurred a symposium on "Cooperation in Biological Research"; at another a symposium on "Immunity." The one occurring in Mandel Hall, on Thursday, was devoted to an important and significant symposium on public health.

On Monday afternoon and Tuesday, sections A and B, with the Chicago section of the American Mathematical Society, listened to a series of addresses and discussions on the teaching of mathematics to students in engineering colleges. The large attendance to hear these addresses and discussions, together with the lively and often spicy character of the latter, fully attests the wide-spread and deep interest in this subject, one of great importance to engineering education. A committee was appointed to make an investigation of actual conditions bearing on the subject and to report its findings and recommendations to the Society for the Promotion of Engineering Education. This society took steps last summer to appoint a committee of somewhat wider scope, and it is presumed that the committee appointed at Chicago will work in conjunction with that of the professional society. A full account of the proceedings relating to the teaching of mathematics will appear in SCIENCE.

Among the discussions of general interest was the very vigorous one before Section I on "The Panic of 1907, and the Monetary System of the Nation." It is hoped that a full report of each of these general discussions will appear later in this journal.

The American Chemical Society, in affiliation with Section C, held a large and

enthusiastic meeting. Including the general papers and addresses, and the programs of the different sections of the society, over 150 papers were presented before this body. On Tuesday, Wednesday and Thursday mornings, sessions of general interest were held.

An important action of the council of the Chemical Society was the organization of the industrial chemists into a Division of Industrial Chemistry and Chemical Engineering, and the undertaking of the publication of a special journal of industrial and engineering chemistry.

The number of resolutions touching matters of general import which were adopted at the Chicago meeting was larger than usual. Of prime interest in this connection is the following letter:

THE WHITE HOUSE,
WASHINGTON

Dec. 31, 1907.

My Dear Sir:—

I am sending you herewith copy of a letter which on November 11th I addressed to the Governors of each of the several states relative to a proper conservation of the natural resources of this country and inviting the Governors, with their experts, to meet in conference on this subject at the White House on May 13, 14 and 15 next.

I enclose also a copy of a letter recently received from the Chairman of the National Advisory Board on Fuels and Structural Materials, in which he suggests that in bringing this matter before the people of the country I invite the cooperation of the National Engineering Societies and other national organizations for research and development.

The suggestion is an excellent one; and I am led to believe that these organizations can render no more important service at this time than to develop among the people of this country a realization of the fact that these resources, upon which the future as well as the present welfare of the nation depends, are being exhausted rapidly, wastefully, and, in many cases, permanently.

I invite the cooperation of the American Association for the Advancement of Science in properly bringing this matter before the people; and it gives me added pleasure to invite you, as the

President of the Association, to take part in this conference at the White House during May 13, 14 and 15 next.

Sincerely yours,

THEODORE ROOSEVELT

The President of the American Association
for the Advancement of Science

Resolutions in accordance with this request were adopted as follows:

Realizing the rapid rate at which important natural resources of the country are being exhausted and the wasteful methods employed in the mining and utilization of other important mineral resources:

Resolved, That the American Association for the Advancement of Science joins President Roosevelt in calling the attention of the people of this country to the need of wisely conserving these resources for the future, as well as the present, needs of the nation; and in doing this the association asks the cooperation of its affiliated societies and other similar organizations throughout the country.

The association also urges upon the federal and state governments the importance of providing for such investigations and the enactment of such legislation as may prove necessary in preventing all unnecessary waste in the utilization of the nation's resources.

Resolved, That copies of this resolution be sent by the secretary of the association to the President of the United States, President of the Senate and to the Speaker of the House of Representatives in Washington; to the presidents and secretaries of the societies affiliated with the association, and of other similar organizations in the United States.

Resolved, That the president of the association appoint a committee of five on the conservation of resources, this committee to take such further action in carrying out this resolution as from time to time the conditions may demand.

Other resolutions of a public character which were adopted follow:

Resolved, That the American Association for the Advancement of Science reaffirms its resolution passed at the New York meeting, favoring the establishment by Congress of the Southern Appalachian and White Mountain Forest Reserves, and reappoints the same committee to present this matter to the Speaker of the House of Representatives and the President of the Senate in an endeavor to secure at this time at least a beginning of this important work.

Relative to the National Bureau of Education, the following resolution was presented from Section L and adopted:

WHEREAS, The National Bureau of Education has for forty years rendered a much-needed service to the educational interests of the country, and

WHEREAS, Owing to inadequate support its growth has for many years lagged far behind the general educational growth of the country at large and far behind the growth of the needs for such service as it can render, and

WHEREAS, It is undertaking to meet the new demands of educators by the publication of bulletins, by the reorganization of its library and bibliographical service, and by providing a national clearing house for all kinds of needed educational information; therefore, be it

Resolved, That the American Association for the Advancement of Science earnestly recommends to Congress the enactment of legislation in regard to the National Bureau of Education that will:

1. Foster and encourage its work and enable it to expand in such a manner as to render its services to American education increasingly effective and scientific.

2. Strengthen it by additions to its present staff of specialists.

3. Enable it to secure quarters adequate for its new work and in keeping with its dignity and usefulness.

4. Provide it with means to render more complete service as a distributing center for such information as is currently needed for the improvement of education in all its grades and enable it to include the collection and dissemination of information needed in the further development of professional and technological schools and the graduate departments of our universities.

5. Raise the salaries of the commissioner and staff of experts to such a point as will enable the bureau not only to secure men of the highest grade, but to retain them permanently in its service.

Relative to research in tropical medicine, the following resolution was adopted:

WHEREAS, There exists at the present time in Panama an extraordinary opportunity for research work in certain phases of tropical medicine, through the existence there of well-equipped hospitals and well-trained medical men under the supervision of an expert sanitarian, himself a member of the Isthmian Canal Commission, and

WHEREAS, The solution of problems connected with this subject is of the highest importance to the welfare of this and other countries, be it

Resolved, That it is the sense of the American Association for the Advancement of Science that Congress at its present session should appropriate funds for the purpose of establishing a research laboratory at the Isthmus which shall devote itself to the solution of existing problems in tropical disease.

Relative to public health there was adopted the following:

WHEREAS, The American Association for the Advancement of Science has appointed a Committee of One Hundred on National Health, and this committee is performing a work of great importance for the welfare of the nation, be it

Resolved, That all members of this association are urged to cooperate with the committee in its efforts to conserve and improve the health of the people and especially in its plans to increase the efficiency of the national government in dealing with the problems of public health.

The following resolution was adopted on the recommendation of Section F:

Realizing that the work in the Panama Canal is changing biological conditions in Panama and that the completion of the canal will enable the fresh-water faunæ of the two slopes to mingle freely and that many marine animals will succeed in passing the completed canal, the American Association for the Advancement of Science urges upon the President and Congress to make provision for a biological survey of the Panama Canal zone.

Since the conditions will be permanently changed as soon as the canal is completed and the work can not be satisfactorily done after the completion of the canal, there is great urgency that provisions for the work be made at once.

Resolved, That the permanent secretary be instructed to send copies of this resolution to the President, the Vice-President, the Speaker of the House and the Secretary of the Smithsonian Institution. (Signed) C. H. EIGENMANN,
C. C. NUTTING,

Committee

On recommendation of Section F the Association endorsed as its own the following resolution:

Resolved, That the American Society of Vertebrate Paleontologists will aid in any way practicable

able those measures legislative, international and local which will prevent the now imminent extermination of the great marine vertebrata, especially the cetaceans and manatees, seals, green and other turtles on the coasts of the United States or in the high seas.

The secretary of the committee on Seismology submitted the following resolutions which were adopted:

WHEREAS, The organized study of earthquakes lately undertaken in other countries is leading to a better understanding of their causes and to the discovery and adoption of means for mitigating their disastrous consequences, be it

Resolved, That, in the opinion of the American Association for the Advancement of Science, the government of the United States should at once make suitable provision for the installation and maintenance of seismographs in properly distributed stations, and,

WHEREAS, The United States Weather Bureau is the best equipped of the government bureaus for undertaking these studies, be it further

Resolved, That in the opinion of this association the necessary appropriations should be made to the Department of Agriculture for the United States Weather Bureau, and be it further

Resolved, That a copy of these resolutions be forwarded to the Committee on Agriculture of the United States House of Representatives.

At the suggestion of the Committee on Policy, as appears below, the following resolution was adopted:

WHEREAS, The late Major James Carroll, M.D., U.S.A., was the first to submit voluntarily to the bite of an infected *Stegomyia* and from the bite of this mosquito suffered a severe attack of yellow fever, the effects of which led to his ultimate death, and

WHEREAS, This was the first experimentally-produced case of yellow fever leading to the present knowledge of this disease, which has practically enabled its complete control, therefore, be it

Resolved, That the American Association for the Advancement of Science now in session in Chicago, Ill., recommends to the Senate and to the House of Representatives of the United States of America the passage of a bill securing to Mrs. Jennie Carroll, widow of the late Major James Carroll, of the Yellow Fever Commission of the United States Army, a special pension for the support of herself and her seven children.

The Darwin Memorial Committee, appointed at the New York meeting, reported as follows:

To the American Association for the Advancement of Science:

Charles Darwin was born February, 1809, and the "Origin of Species" appeared in November, 1859. In celebrating the semi-centennial of the latter we have the opportunity of celebrating the centennial of the former. Your committee consequently recommends:

1. This double celebration.
2. The date of the celebration to be during Convocation Week, 1908-9.
3. That the method of celebration be as follows:
 - (a) That a morning and afternoon of the meetings of the American Association for the Advancement of Science during Convocation Week, 1908-9, be devoted to a series of addresses on various aspects of the theory of evolution, and that these be given solely by persons actively engaged in research bearing on evolution.
 - (b) That a dinner be arranged on the evening of the same day, followed by addresses of a more general nature concerning Darwin and his work.
 - (c) That all addresses be published in a Darwin Anniversary volume, to appear during 1909, the anniversary year.
 - (d) That the committee have full power to arrange the program.
4. It is recommended that the committee be authorized to raise a fund to pay the expenses of Mr. Francis Darwin or other foreign speaker or speakers.

The Committee on the Investigation of the Cave Fauna of North America presented through the recorder, Professor C. H. Eigenmann, a report which will be printed later.

The Committee on Seismology through its secretary, Professor Wm. H. Hobbs, reported as follows:

Your committee organized with Professor H. F. Reid, of Johns Hopkins University, as chairman, and Professor W. H. Hobbs, of the University of Michigan, as secretary. The following sub-committees were named:

- 1, A committee to determine the best form or forms of seismograph for the seismological stations to be established; Messrs. Reid, Marvin and Bauer.

2. A committee of three members with power to add to its number to report as to what action is deemed desirable in reference to recommendations concerning earthquake-proof construction; Messrs. Lawson, McGee and Campbell.

3. A committee on stations. This committee is working in cooperation with the Weather Bureau, looking toward the establishment of seismographs in the stations of the Weather Bureau.

The Committee on Bibliography of Science submitted the following report:

The committee appointed a year ago has secured from Dr. Haviland Field full details in regard to the work of the Concilium Bibliographicum and from Dr. Cyrus Adler a series of documents bearing on the work of the International Catalogue of Scientific Literature. There is some duplication in the work of the two institutions, but we are of the opinion that the Concilium Bibliographicum should be supported. Apart from the Swiss state and municipal subventions, the only appropriation in 1906 for its work was that of the American Association for the Advancement of Science. It is somewhat doubtful whether the research fund of the association should be used for bibliographical purposes; but we are inclined to recommend the continuation of this grant if there are no more urgent demands on the fund.

The members of the committee live so far apart that meetings could not be arranged during the year. We are of the opinion that an active committee on the bibliography of science could render an important service to the association and for the advancement of science, but the members of the present committee fear that it will be impossible for them to undertake this work. We therefore recommend a new standing committee on the bibliography of science.

(Signed) R. S. WOODWARD
C. B. DAVENPORT
JAS. LEWIS HOWE
J. MCK. CATTELL

The Committee on Policy through its chairman, R. S. Woodward, made the following recommendations of general interest, which were adopted:

1. That the committee on policy should in the future consist of the president, the retiring president, the treasurer, the permanent secretary and five other members.

2. That any member of the affiliated societies joining the association during the year 1908 should

have his admission fee remitted and that a letter stating this fact should be addressed to all members of affiliated societies not already members of the association.

3. That the four great engineering societies (Civil, Mechanical, Electrical and Mining) and also the American Medical Society be invited to send representatives to the council of the association, and that the chairman of the committee on policy and the permanent secretary be appointed a committee to conduct the necessary correspondence.

4. That hereafter the annual volume be greatly reduced in size by omitting addresses and abstracts, and confining it simply to a list of members, constitution and the business of the meeting, and to devote the sum saved, not to exceed \$850, to additional clerical help for the permanent secretary.

5. That the sum of \$500, presented by an unknown client of Mr. John L. Bissell, of New York City, to the association be invested as a permanent fund, the income to be used for the general purposes of the association.

6. That the Committee of One Hundred on Public Health appointed by Section I of the association be made a committee of the association.

7. That the council adopt a resolution concerning a pension for the widow of the late James Carroll, the said resolution to be formulated by Messrs. Welch and Howard.

8. That the council approve the application of the American Federation of Teachers of the Mathematical and Natural Sciences for affiliation with the association.

9. That the council authorize a committee to consider the feasibility of a plan suggested by Mr. Newcomb concerning the advisability of the publication of reports of progress similar to those published by the British Association.

10. That the association look forward to the time when it shall employ a permanent secretary who may devote his full time to the work of the association and who shall receive an adequate salary.

11. That the committee on the relations of the association with the journal *SCIENCE* be discharged, and that a standing committee of three on organization and membership be appointed by the president.

One of the most earnestly discussed matters at the Chicago meeting was the relation of the association with the affiliated societies. The council reaffirmed its action

taken at the Philadelphia meeting permitting sectional committees to dispense with a sectional program whenever an affiliated society meets with the section, and to turn over all technical papers to a joint program of the society and the section. In discussing this question there appeared a wide divergence of opinion as to what action was *immediately* necessary. There was reported from some of the sections a strong sentiment in favor of making this action mandatory rather than permissive. The reaffirmation was accepted as a temporary expedient, and a resolution was adopted instructing the officers of sections to confer with the officers of the corresponding societies usually meeting in affiliation with reference to programs and policy, and to report to the permanent secretary for presentation to the council at the next meeting of the association.

The importance both to the association and to science of the proper solution of this problem of affiliation was clearly recognized. Conditions influencing it are different in the case of different sections, and some degree of patience and of toleration on the part of all concerned is called for during the effort to work it out. At Chicago the relations between the sections and the societies were of the most cordial nature, and this condition augurs well for the effort to arrive at a better working arrangement.

In accordance with various resolutions of the council the following committees were appointed by the president:

Additional members of the Committee on Policy, Messrs. Wm. H. Welch and N. L. Britton.

On preservation of the national resources, Messrs. T. C. Chamberlin, Irving Fisher, M. T. Bogert, W. F. M. Goss and Gifford Pinchot.

On organization and membership, Messrs. R. S. Woodward, L. O. Howard and J. McK. Cattell.

Section C appointed a committee to look into the question whether the report adopted by the section some years ago re-

garding the spelling of chemical terms represents the best present usage, or now has the endorsement of the section. The committee named consists of Messrs. W. A. Noyes, Chairman, L. P. Kinnicutt and C. L. Parsons.

In accordance with the recommendation of the Committee on Grants there was granted \$100.00 to the Concilium Bibliographicum and \$100.00 to the Committee on Cave Fauna. An appropriation of \$50.00 from the general fund was made to pay the expenses of the committee on seismology.

The engineers and mathematicians dined together on Monday evening. The annual dinner of the American Society of Naturalists and that of the American Association of Geographers occurred on Tuesday evening. The former was followed by the address of the president of the society, Dr. J. P. McMurrich. On Wednesday evening there was held a smoker for the American Society of Naturalists, the Association of American Anatomists, the American Physiological Society, the American Society of Biological Chemistry, the American Society of Bacteriologists, the American Society of Zoologists and the Botanical Society of America. The annual banquet of the Sigma Xi Society was held on Thursday evening.

Social events ended with the meeting in a fitting climax at the dinner in honor of Professor Albert A. Michelson recent recipient of the Copley medal and the Nobel prize. Noteworthy among those present on this occasion was Professor Edward W. Morley, sometime a collaborator of the guest in honor, and who was present with Professor Michelson at the meeting of the Royal Society in December and received on that occasion the society's Davy medal.

The general committee fixed the place of the next regular meeting at Baltimore and the time Convocation Week 1908-9. It

also voted to hold a summer meeting, probably during the week beginning June 28, 1908, at Dartmouth College, Hanover, N. H.

Dr. T. C. Chamberlin, of the University of Chicago, was elected president of the association.

Dr. J. Paul Goode, of the same institution, was elected general secretary.

Dr. Dayton C. Miller, of Case School of Applied Science, was chosen secretary of the council.

The sectional officers stand as follows:

A—Mathematics and Astronomy.

Vice-president—C. J. Keyser, Columbia University.

Secretary—Professor G. A. Miller, University of Illinois.

B—Physics.

Vice-president—Carl E. Guthe, State University of Iowa.

Secretary—A. D. Cole, Vassar College.

C—Chemistry.

Vice-president—Louis Kahlenberg, University of Wisconsin.

Secretary—C. H. Herty, University of North Carolina.

D—Mechanical Science and Engineering.

Vice-president—Geo. F. Swain, Massachusetts Institute of Technology.

Secretary—G. W. Bissell, Michigan Agricultural College.

E—Geology and Geography.

Vice-president—Bailey Willis, U. S. Geological Survey.

Secretary—F. P. Gulliver, Norwich, Conn.

F—Zoology.

Vice-president—C. Judson Herrick, University of Chicago.

Secretary—Morris A. Bigelow, Columbia University.

G—Botany.

Vice-president—H. M. Richards, Columbia University.

Secretary—H. C. Cowles, University of Chicago.

H—Anthropology and Psychology.

Vice-president—R. S. Woodworth, Columbia University.

Secretary—Geo. H. Pepper, American Museum of Natural History.

I—Social and Economic Science.

Vice-president not chosen.

Secretary—J. Pease Norton, Yale University.

K—Physiology and Experimental Medicine.

Vice-president—Wm. H. Howell, Johns Hopkins University.

Secretary—William J. Gies, Columbia University.

L—Education.

Vice-president—G. Stanley Hall, Clark University.

Secretary—C. R. Mann, University of Chicago.

F. W. McNAIR,

General Secretary

THE INTERDEPENDENCE OF MEDICINE AND OTHER SCIENCES OF NATURE¹

SIXTY years ago, when the American Association for the Advancement of Science was founded, all of the main divisions of the sciences of nature existed as they do to-day, but no greater change has come over the face of science during these years than the many subdivisions which have arisen. Then the naturalist or the natural philosopher—how unfamiliar even the names are beginning to sound!—or the chemist could follow with critical judgment at least the work of all who were cultivating his own broad field of science, and a single scientific association, such as ours, could unite all of the workers in the natural and physical sciences into a relatively homogeneous and compact group, supply their needs for intercourse with each other and furnish a comprehending audience for presentation of the results of scientific investigation. To-day no man of science can pretend to follow all of the work even in his own department, and the investigator more often than not must seek an audience capable of critical understanding and discussion of his studies in a society of biological chemists, or of experimental zoologists, or of plant pathologists, or of dairy bacteriologists, or whatever may be the body

¹ Address of the retiring president of the American Association for the Advancement of Science, delivered at the meeting in Chicago, December 30, 1907.